

REMARKS

This is an amendment after final action and request for continued examination under 37 C.F.R. 1.114.

I. New Matter Canceled

The amendment filed May 12, 2005 was objected to under 35 U.S.C. 132 (a) for containing "new matter".

The change in the ATCC number for the strain of *Methylosinus tricosporium* listed in the original specification was considered to be "new matter" because there was no disclosure of the new ATCC number in the originally filed application papers.

Applicants inform us that the ATCC number for *Methylosinus tricosporium* disclosed in the original specification was incorrect and due to the mere fact that the number was incorrectly written down by the inventor when the JP application was drafted. This could happen in several ways although it is clear it would not be a simple typographical error in which e.g. digits are reversed. If the inventor were searching a list of ATCC numbers correlated with characteristics, perhaps his eye strayed to another line on the list, which would explain why the ATCC number is completely different.

If there is any way to correct this inadvertent error, for example by filing a copy of the inventors' laboratory notebook and a Declaration of the inventor, please let us know.

So that prosecution can continue in an expeditious manner however applicants' have changed the ATCC number for *Methylosinus tricosporium* back to the ATCC number that was present in the originally filed application papers. This should not be taken as indication that the original ATCC number was the correct number however.

Consequently the specification and claims have been amended to reverse the change in the ATCC numbers for *Methylosinus tricosporium* that was made by the previous amendment.

In view of the changes in the claims and specification withdrawal of the objection under 35 U.S.C. 132 (a) because of the introduction of new matter is respectfully requested.

II. New Claims Overcome Rejection based on Non-statutory Subject Matter

Claims 9 to 14 have been canceled because they were rejected under 35 U.S.C. 101 for containing non-statutory subject matter. Their cancellation has obviated this rejection.

New agent claims 15 to 19 have been filed and claims 9 to 14 have been canceled. The term "agent" is used in the preamble of claims 15 to 18 instead of

"fungi and symbiotic bacterial mixture". The basis for this change is found in the last five lines on page 5 of the applicants' originally filed specification.

The agent for treating and deodorizing organic waste described on pages 5 and 6 of the specification is the invention that is claimed in new claims 15 to 20. It should be appreciated that applicants' have never stated in the specification that the agent for treating and deodorizing consists of a mixture of bacteria and fungi. Other ingredients may be present besides the mixture. Furthermore the mixture of bacteria and fungi that is present in the applicants' inventive agent is not limited to the specific bacteria and fungi listed "In the concrete" on page 5 of applicants' specification. Page 5 of the specification clearly states the "microbe group", i.e. the mixture, **"includes, to mention predominant ones"** the listed bacteria and fungi. In other words, in addition to other ingredients, for example inert species, salts and carbon nutrient sources, which are present the claimed agent may contain other bacterial and fungi species, although the listed species are believed to be the predominant ones present (with the exception of the mistake described above). Thus the invention is better entitled or named in terms of its use as an agent for treating and deodorizing organic waste.

Claims 15 to 20 are product-by-process claims for the agent for treating and deodorizing organic waste disclosed on page 5 of the specification. The second to the last full paragraph on page 9 of applicants' specification supports the subject matter of the new independent claim 15. This paragraph clearly describes the agent as the product of a method that comprises steps that are performed by human intervention. First, organic waste liquid (sewage) is

transferred into an aeration tank; next, the organic waste liquid in the aeration tank is aerated under weakly aerobic conditions with oxygen dissolved in the organic waste liquid but with an oxygen concentration in the organic waste liquid maintained at 1 ppm or less and with electron acceptors present in the organic waste liquid, so as to form a supernatant and a sediment; after the aerating then either the supernatant is extracted or the sediment is separated from the organic waste liquid, the sediment is then aerated again under the weakly aerobic conditions to obtain another supernatant and after that the other supernatant is extracted.

The steps of the method to make the agent are clearly steps that must be performed by human intervention. For example when the organic liquid waste is placed in the aeration tank it is necessary to control the dissolved oxygen concentration so that it is not zero (so that it is present) but maintained at a level of 1 ppm or less. Since the relevant step in the product-by-process claim claims aerating some oxygen will always be present so that conditions are never anaerobic (they are microaerobic). Also the other steps must be performed by human intervention, such as placing sewage in the aeration tank. Similarly the step of extracting the supernatant must be performed with human intervention.

Dependent claim 16 limits the organic waste liquid to sewage. This limitation is supported by the disclosure on page 9 of applicants' specification. Dependent claim 17 recites further steps for treating the supernatant obtained in claim 15 to obtain applicants' products. The basis for these features is found in the full paragraph on page 11.

Also note the use of the term "under weakly aerobic conditions" on page 11, line 20, which is present in claim 17. This term clearly indicates that some oxygen is always present during the treatment steps in applicants' process (not anerobic conditions). That is the claimed method for making the agent requires a step in which the oxygen dissolved in the organic waste is present in a non-zero amount but is controlled so that it is less than 1 ppm. This must be the result of human intervention to closely control the dissolved oxygen concentration.

Applicants have inform us that a meter is inserted in the aeration tank that measures dissolved oxygen concentration and that the introduction of air is actually controlled so that the concentration is between 0 and 1 ppm.

The result of the steps to make the agent is a product containing a mixture of cultured microorganisms, e.g. eight bacteria and fungi, and other ingredients, which is not produced by any natural conditions that are present in nature and this product is not found in nature. The concentration range for dissolved oxygen is maintained in the entire organic waste at the top of the aeration tank as well as at the bottom to produce this product.

It is apparent that the applicants' product (agent) is different from any mixture of bacteria used to treat sewage and is not found in nature because it has properties of such microbe mixtures that are not present in nature. For example, page 12 of the applicants' specification states that the claimed agent has deodorizing properties in contrast to conventional mixtures of bacteria and fungi according to the prior art that are used to treat and decompose organic waste material. See also applicants' table 6. The applicants' believe that the

deodorizing action of the agent is due to the particular combination of microbes present in the agent, which cooperate as claimed in dependent claim 20.

For the foregoing reasons and because of the product-by-process wording and other changes in the new claim 15, it is respectfully submitted that none of the new claims 15 to 19 should be rejected under 35 U.S.C. 101.

III. Amended Withdrawn Claims and Rejoinder

Method of treatment claims 6 and 8 have been amended so that they claim a method of treating/deodorizing the organic waste or fetid source with the agent for treating and deodorizing of claim 15. Steps for preparing the agent are directly included in claims 6 and 8 so that they are independent claims. The method of deodorizing for example is unexpectedly better to current prior art methods as shown by the results in Table VI in applicants' specification.

In accordance with M.P.E.P. 821.04 rejoinder of the method-of-use claims 6 and 8 is respectfully requested if claim 15 is found to be allowable. Method-of-use claims 6 and 8 have been amended so that they include all the features and limitations of claim 15. Furthermore applicants intend to amend claims 6 and 8 further if additional limitations are required in claim 15 so that rejoinder is possible.

IV. Obviousness Rejection

Claims 9 to 14 were rejected under 35 U.S.C. 103 (a) as obvious over Higa (US '634) in view of Kikuth, et al, and Yusho.

Claims 15 to 19 replace canceled claims 9 to 14.

Claim 15 does claim an agent for treating and deodorizing organic waste that contains *Mucor indicus* (ATCC90364), *Myxococcus sp.* (ATCC49305), *Flavobacterium johnsoniae* (ATCC23107), *Pseudomonas alcaligenes* (ATCC14909), *Klebsiella ornithinolytica* (ATCC31898), *Bacillus licheniformis* (ATCC14580), *Bosea thiooxidans* (ATCC700366) and *Methylosinus tricosporium* (ATCC35070).

It is respectfully submitted that the cited prior art references do not establish a case of *prima facie* obviousness of claim 15 or an agent containing the above microbes. The eight microbes listed in the last paragraph of claim 15 cooperate in a special way to decompose organic waste while deodorizing it, as claimed by applicants' claim 19.

U.S. '634 is the only reference that discloses a composition in which the microbes are identified. U.S. '929 and U.S. '736 admittedly were not cited for disclosures regarding the identification of various bacteria and fungi in an agent for treating organic waste (see page 8 of the Office Action).

U.S. '634 discloses a mixture of 18 species of microbes. These microbes include *Streptomyces albus*, *Streptovorticillum baldaccii*, *Nocardia asteroides* and *Micromonospora chalybeata*; *Rhodopseudomonas sphaeroides*, *Rhodospirillum*

rubrum and *Chromatium okenii*; *Lactobacillus bulgaricus*, *Propionibacterium freudenreichii*, *Pediococcus halophilus* and *Streptococcus faecalis*; *Aspergillus japonicus*, *Aspergillus oryzae* and *Mucor heimalis*; *Saccharomyces cerevisiae*, *Sacchoaromyces lactis* and *Candida utilis*. See column 5, line 50, to column 6, line 4, of Higa. These microbes are different in unobvious ways from the applicants' group of eight microbes in claim 15.

Admittedly only a single one of the microbes in the group of Higa is in the same genera as one of the eight microbes of applicants' claim 15! None of the 18 microbes in the mixture of the reference is the same as any of the microbes in applicants' claim 15.

If a chemical composition were being claimed instead of a mixture of bacteria and fungi, perhaps the situation would be clearer. The additional unidentified microorganisms present in the applicants' mixture are irrelevant. The point is that the applicant has identified eight different microorganisms, identified and characterized them and classified them into three primary groups that cooperate with each other to deodorize as well as decompose.

If a chemical composition were being claimed containing eight different types of ingredient, e.g. anionic surfactant, cationic surfactant, conditioner, thickener, turbidity-inducing ingredient, preservative, alcohol, water, how could a prima facie case of obviousness be established by a reference that taught a composition with 18 ingredients, which were different except that one of the eighteen ingredients was a nonionic surfactant?

It is respectfully submitted that a *prima facie* case of obviousness of the new claim 15 has not been established because the only prior art reference that discloses a mixture of microorganisms which have been identified and characterized, namely Higa, does not disclose a single one of applicants' eight microorganisms and only a single microorganism that belongs the *Mucor* genera.

Objective evidence should not be required until the U.S. Patent Office provides a reference that teaches a mixture of microorganisms that contain a reasonable number of at least similar microorganisms.

That is the reason that the presence of yeast microorganisms was pointed out – because yeast microorganisms are entirely different from any of the applicants' eight microorganisms present in claim eight.

Also Higa does not include any denitrifying bacteria. However *Flavo-bacterium johnsoniae* (ATCC23107) and *Bacillus licheniformis* (ATCC14580) are denitrifying bacteria and are part of applicants' group of eight in claim 15. Denitrifying bacteria breathe using nitrate and decompose organic materials and odor producing metabolites in symbiotic relations with other bacteria. This is part of the reason that applicants' claimed agent is useful for deodorizing.

In addition the mixtures of applicants and Higa are grown under different conditions. Higa grows their agent or microbe mixture under completely anerobic conditions (no air is supplied by aeration). The microbe group of claim 15 is grown in an environment which is weakly aerobic, i.e. oxygen is supplied, but the oxygen concentration is 1 ppm or less. A mixture cannot be aerated without supplying oxygen to some degree thus applicants' conditions are not anerobic.

Thus it would be surprising that the same bacteria would thrive in applicants' conditions that were grown by Higa.

It is correct that the claims at issue are composition claims and claims for a mixture of microorganisms. That is exactly why the identification and characterization of the individual microorganisms present in the claimed mixture should determine whether or not the mixture is patentable.

Applicants have identified, characterized and recited eight specific microorganisms in their claimed mixture, which are entirely different from those of the reference. There is no need for any further evidence to establish these differences, which are not obvious from the disclosed group in Higa.

For the foregoing reasons it is respectfully submitted that the burden of proving unobviousness has not shifted to the applicants.

Thus it is respectfully submitted that new claims 15 to 19 should not be rejected under 35 U.S.C. 103 (a) over Higa (US '634) in view of Kikuth, et al, and Yusho.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,


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